Cal/Ecotox
Exposure Factors for Great Horned Owl (Bubo virginianus)*

Endpoint Type	Endpoint Value	Error	Range	Units	Sex	Life Stage	Location	Note	Reference
Body Weight - Mean	1,588	147		g	F	Adult	Lab	a	1
Body Weight - Mean	1142.2 (pallascens), 1312.4 (pacificus), 1555.1 (occidentalis), 1768.5 (virgianus), 1556.0 (wapacuthu)			g	F	Adult	Lab	b	2
Body Weight - Mean	1,229	106		g	M	Adult	Lab	c	1
Body Weight - Mean	914.2 (pallascens), 991.7 (pacificus), 1154.3 (occidentalis), 1317.8 (virgianus), 1238.6 (wapacuthu)		319-372	g	M	Adult	Lab	d	2
Body Weight - Mean	1615			g	NR	Adult	Lab	e	3
Body Weight - Mean			46-56	oz	NR	Juvenile	Lab	f	4
Clutch or Litter Size	2.5		2-4	eggs/clutch	F	Adult	AZ	g	5
Clutch or Litter Size	3.0	0.56	2-4	eggs/clutch	F	Adult	WA	h	6
Clutch or Litter Size	2.2	0.2 SE	2-3	eggs/clutch	F	Adult	MT	i	7
Clutch or Litter Size	2.2		2-3	eggs/clutch	F	Adult	WY	j	8
Clutch or Litter Size	1-4			young/nest	NR	Juvenile	OH	k	9
Dietary Composition	mammals (47.0%), birds (5.2%), reptiles (15.7%), arachnids (8.7%), centipedes (7.0%), insects (16.5%)				B	Adult	MEXICO	l	10
Dietary Composition	Dipodomys ordii (0.13%), Microtus montanus (0.14%), Perognathus parvus (0.02%), Peromyscus maniculatus (0.50%), Thomomys umbrinus (0.21%)				F	Adult	NV	m	11
Dietary Composition	Dipodomys ordii (0.11%), Microtus montanus (0.12%), Perognathus parvus (0.03%), Peromyscus maniculatus (0.63%), Thomomys umbrinus (0.10%)				M	Adult	NV	n	11
Dietary Composition	wolf spider (1), centipede (2), tarantula (3), grasshopper (1), walking stick (2)				NR	Adult	TX	o	12
Dietary Composition	rodents (98.5%), birds + insects + reptiles + lagomorphs (1.5%)				NR	Adult	ARGENTINA	p	13
Dietary Composition	meadow vole and jumping mouse (11.3%), juv. white-tailed jackrabbit (9.4%), horned or eared grebe (5.7%), American coot (22.6%), sora and Virginia rails (3.8%), duck (26.4%), sharp-tailed grouse (9.4%), blackbird (11.3%)				NR	Nestling	ND	q	14
Dietary Composition	Sylvilagus spp. (1.0%), unident. lagomorphs (0.2%), Peromyscus maniculatus (42.%), Microtus monatus (23.7%), unident. rodents (2.9%), Myotis spp. (1.9%), unident. mammal (1.5%), Podiceps nigricollis (1.0%), unident. rail (0.2%), Larus californicus (1.7%), unident. owl (0.4%), unident. blackbird (0.4%), unident. large bird (4.6%), unident. medium bird (1.2%), unident. small bird (6.9%), unident.				NR	NR	Mono; CA	r	15

Endpoint Type	Endpoint Value	Error	Range	Units	Sex	Life Stage	Location	Note	Reference
Dietary Composition	vertebrate (1.0%), insects (8.3%), scorpions (0.4%)								
Dietary Composition	Lepus californicus (0.2%), Sylvilagus spp. (6.0%), unident. lagomorphs (1.7%), Peromyscus maniculatus (69.2%), Microtus monatus (0.7%), Dipodomys spp. (0.6%), unident. rodents (0.4%), Myotis spp. (1.1%), unident. chiropteran (0.2%), unident. mammal (3.9%), Larus californicus (1.3%), unident. large bird (7.1%), unident. medium bird (1.1%), unident. small bird (0.9%), unident. vertebrate (4.3%), insects (1.5%)				NR	NR	Mono; CA	s	15
Dietary Composition	Microtus (66.7%), Peromyscus (27.6%), Dipodomys (1.1%), Sylvilagus (0.3%), Euphagus cyanocephalus (0.3%), Sorex (0.2%), Tadarida brasiliensis (0.2%), Mustela frenata (0.2%), unident. bird (1.4%), unident. small mammal (0.7%), insect (1.3%)				NR	NR	Siskiyou; CA	t	16
Dietary Composition	Sylvilagus nuttallii (12.4%), Spermophilus washingtoni (0.4%), Thomomys talpoides (29.7%), Perognathus parvus (12.5%), Dipodomys ordii (1.4%), Reithrodontomys megalotis (0.3%), Peromyscus maniculatus (6.2%), Neotoma cinerea (2.1%), Microtus montanus (7.7%), Mus musculus (0.2%), unident. microtinae (4.5%), Mustela frenata (0.4%), Anas platyrynchos (2.6%), Phasianus colchicus (2.5%), Fulica americana (1.5%), Charadrius vociferus (0.2%), Tyto alba (10.7%), Sternella neglecta (0.2%), unident. Fringillidae (0.2%), unident. Passeriformes (1.2%), unident. snake (1.4%), Cyprinus carpio (1.3%), Stenopelmatus spp (0.2%)				NR	NR	WA	u	17
Dietary Composition	unident. snake (0.3%), Sylvilagus nuttallii (19.2%), Lepus californicus (14.3%), unident. leporid (16.1%), Spermophilus townsendii (0.6%), Thomomys townsendii (14.6%), Perognathus parvus (0.4%), Dipodomys ordii (11.1%), Reithrodontomys megalotis (0.2%), Peromyscus spp (2.3%), Neotoma cinerea (4.6%), Neotoma lepida (2.0%),				NR	NR	ID	v	18

Endpoint Type	Endpoint Value	Error	Range	Units	Sex	Life Stage	Location	Note	Reference
Dietary Composition	unident. woodrat (0.3%), Microtus montanus (4.7%), Mus musculus (0.7%), Mustela frenata (0.1%), Falco sparverius (0.1%), Phasianus colchicus (1.9%), Callipepla californicus (0.1%), unident. galliform (0.4%), Fulica americana (0.4%), Columba livia (0.9%), Tyto alba (0.3%), Sturnus vulgaris (0.2%), unident. passerine (0.6%), unident. bid (3.4%)								
Dietary Composition	white-footed mice (3.6%), meadow mice (64.5%), shrews (0.3%), weasels (0.6%), red squirrel (0.3%), pocket gopher (23.5%), snowshoe rabbit (2.8%), ruffed grouse (1.4%) sage grouse (0.3%), mallard (0.6%), sm-med sized birds (1.4%), sucker (0.8%)			%	NR	NR	WY	w	8
Dietary Composition	white-footed mice (58.2%), meadow mice (28.0%), other small mammals (2.8%), medium sized mammals (5.1%), gamebirds and sm-med sized birds (4.8%), other birds (1.2%)				NR	NR	MI	x	8
Dietary Composition	Neotoma fuscipes (11.3), Thomomys bottae (36.2), Mus musculus (14.0), Microtus californicus (13.5), Reithrodontomys megalotis (8.7), Perognathus sp. (7.8), Dipodomys agilis (3.1), Peromyscus sp. (3.1), Notiosorex crawfordi (1.3), Sylvilagus sp. (0.5), Sorex ornatus (0.5)				NR	NR	CA	y	19
Dietary Composition	Neotoma fuscipes (7.9%), Thomomys bottae (20.7%), Mus musculus (25.0%), Microtus californicus (14.9%), Reithrodontomys megalotis (1.7%), Perognathus sp. (4.1%), Dipodomys agilis (4.3%), Peromyscus sp. (3.8%), Notiosorex crawfordi (0.3%), Sylvilagus sp. (0.8%), Sorex ornatus (0.1%), Scapanus latimanus (0.7%), Stenopelmatus sp (2.1%), Elgaria multicarinata (0.1%), unident. birds (4.3%)				NR	NR	Los Angeles; CA	z	19
Dietary Composition	cottontail (61.1%), woodrat (17.9%), kangaroo rat (4.5%), pocket gopher (4.3%), gopher snake (3.7%), ground squirrel (2.4%), other spp (birds, reptiles, amphibians, invertebrates; 6.1%)				NR	NR	Madera; CA	aa	20

Exposure Factors for Great Horned Owl (Bubo virginianus)*

Endpoint Type	Endpoint Value	Error	Range	Units	Sex	Life Stage	Location	Note	Reference
Fledging or Weaning Rate	9/16			successful nests/total nests	B	Adult	AZ	ab	5
Fledging or Weaning Rate	2.67	1.09		fledglings/nest	NR	Fledgling	WA	ac	6
Fledging or Weaning Rate	64%				NR	Fledgling	MT	ad	7
Fledging or Weaning Rate	2			fledglings/pair	NR	Fledgling	WY	ae	8
Fledging or Weaning Rate			1.6-2.0	fledglings/nest	NR	Fledgling	WI	af	21
Fledging or Weaning Rate	1.1			young/nest	NR	Nestling	AZ	ag	5
Food Ingestion Rate	26.58	4.08		g/kg/d	NR	Adult	Lab	ah	3
Food Ingestion Rate	26.37	6.33 SD		g/kg/d	NR	Adult	Lab	ai	3
Food Ingestion Rate	115	16.9 SD		g/d	NR	Adult	Lab	aj	22
Food Ingestion Rate	114	21.4 SD		g/d	NR	Adult	Lab	ak	22
Food Ingestion Rate	62.6			g/d	NR	Adult	Lab	al	23
Food Ingestion Rate			82-85	g	B	NR	Lab	am	8
Foraging Distance	0.25			mi	B	Adult	MI	an	8
Growth Rate	0.1900				F	Nestling	OH	ao	24
Growth Rate	see figures				NR	Nestling	Lab	ap	25
Hatching Success	47.3%				NR	Juvenile	OH	aq	9
Hatching Success	2.67	1.09		hatches/nest	NR	Nestling	WA	ar	6
Hatching Success	100%				NR	Nestling	MT	as	7
Hatching Success	11				NR	Nestling	WY	at	8
Home Range	24.8-26.1			square km	B	Adult	CANADA	au	26
Home Range			66-400	ha	NR	NR	IA	av	27
Inhalation Rate	19.1	3.28 SD		#/min	NR	Adult	Lab	aw	28
Longevity	28+			yr	F	Adult	CANADA	ax	29
Longevity	20.7			yr	NR	Adult	CANADA	ay	30
Metabolic Rate	0.343	0.044		ml O^2/g bw/hr	F	Adult	Lab	az	1
Metabolic Rate	0.566	0.080		ml o^2/g bw/hr	M	Adult	Lab	ba	1
Metabolic Rate	0.59			cc O^2/g bw/hr	NR	Adult	Lab	bb	31
Population Density			3-5	pairs/study site	B	Adult	WA	bc	6
Population Density			11-19	individuals/study site	B	Adult	WA	bd	6
Population Density	1			pair/3 mi^2	B	Adult	WY	be	8
Population Density			0.12-0.22	pairs/mi^2	B	Adult	WI	bf	21
Population Density	1			bird/100 acres	NR	Adult	CA	bg	32
Population Density			14-25	birds/2000 ac	B	Both Adult and Juv.	Madera; CA	bh	20
Population Density	1			bird/2000 acres	B	NR	MI	bi	8

Exposure Factors for Great Horned Owl (Bubo virginianus)*

Endpoint Type	Endpoint Value	Error	Range	Units	Sex	Life Stage	Location	Note	Reference
Survival/ Mortality	31%				NR	Both Adult and Juv.	CANADA; USA	bj	33
Survival/ Mortality	46%				NR	Juvenile	CANADA; USA	bk	33
Territory Size	4.83	0.40 SE	2.30-8.83	square km	B	Adult	CANADA	bl	26
Territory Size			0.45-1.11	mi^2	NR	Adult	WY	bm	8
Time of Hatching or Parturition	Apr 14				NR	Nestling	WY	bn	8
Time of Mating/ Laying	February (peak), March (end)				F	Adult	AZ	bo	5
Time of Mating/ Laying	Feb 5-15				F	Adult	WI	bp	21
Time of Nesting	mid-Feb to Jun 20				B	Adult	MT	bq	7
Time of Nesting	Mar 12 - Jun 4				B	Adult	WY	br	8

Notes

a mean body weight; N=2 birds; Condition=fasted
b body weight means for 5 subspecies; N=12-29 individuals/subspecies; Data collected from museum specimens.
c mean body weight; N=4 birds; Condition=fasted
d Body weight means for 5 subspecies; N=10-26 individuals/subspecies; Data collected from museum specimens.
e mean of averaged body weights (10-13 weighings/bird); N=4 birds
f maximum body weights achieved by captively raised chicks; N=2 birds; captured in Kansas
g mean clutch size; N=16 nests; Condition=breeding; Pima and Pinal Counties
h average clutch size; N=12 nests; Hanford Site, Benton and Franklin Counties
i N=6 nests; south-central Montana
j N=4 nests; spring; Jackson Hole
k brood size at the time of banding; N=906 nests; near Cincinnati; 31% of nests had 1 young, 64% of nests had 2, 5% of nests had 3, 0.1% of nests had 4.
l percent of total numbers of prey items in diet, based on pellet analysis; N=2 owls (49 pellets); Condition=nesting; May-Jun; El Comitan, Baja California Sur; See citation for breakdown of species identified.
m relative proportion of prey species in the diet, based on pellet analysis; N=1 owl; Gund Research Ranch, University of Nevada
n relative proportion of prey species in the diet, based on pellet analysis; N=1 owl; Gund Research Ranch, University of Nevada
o numbers of prey items in stomach contents; N=1 owl; Jun; 13 mi NE Fort Davis, Jeff Davis County
p percent of prey types in diet (seasonal average); N=522 pellets; February-November; near Bariloche, northwest. Patagonia; Commonest prey species was Eligmodontia morgani.
q relative frequency of prey species occurence in nests; N=78 nest visits; June; Lostwood National Wildlife Refuge; Approximately 64% of prey were species directly associated with wetlands.
r percent occurence of prey items in pellets; N=219 pellets, 518 remains; Aug, Apr; Paoha Island, Mono Lake
s percent occurence of prey items in pellets; N=188 pellets, 536 remains; May, Jun; Negit Island, Mono Lake
t percent occurence of prey items in pellets; N=107 pellets; Jun; Tule Lake National Wildlife Refuge
u percent of total prey biomass; N=234 pellets; Oct-Jun; Esquatzel Coulee, Franklin County
v occurence in diet as percent of total prey biomass, based on pellet analysis; N=14 nesting areas, 1472 prey items; nesting season; Snake River Birds of Prey National Conservation Area (42 deg, 50'N, 115 deg, 50'W)
w percent occurrence of prey items in diet during nesting; N=361 food items, 4 nests; spring; Jackson Hole
x percent occurrence of prey items in pellets; N=297 pellets from 14 owls; winter; Superior township
y percent of total number of specimens identified in pellets; N=NR; Santa Monica Mountains (1 ledge)
z percent of total number of specimens identified in pellets; N=25 lbs of pellets; Univ. of Calif., Los Angeles campus
aa percent occurrence by weight in pellets; N=654 pellets, 1471 prey items; Nov, Jan, Feb, Mar, May; San Joaquin Experimental Range; No seasonal changes in composition of pellets were observed. See citation for complete prey species list.
ab fraction of nests that sucessfully raised at least one nestling to the age of 4 weeks; N=16 nests; Condition=breeding; Pima and Pinal Counties
ac average number of young fledged; N=12 nests; Hanford Site, Benton and Franklin Counties
ad percent of nests known to fledge young; N=11 nests; south-central Montana
ae number of fledglings produced per pair; N=4 nests; spring; Jackson Hole
af mean number of fledglings produced per successful nest; N=11-17 nests (3 study years); southern Green County
ag rate of production of young at least 4 weeks old; N=16 nests; Condition=breeding; Pima and Pinal Counties
ah daily food intake on a mouse diet, dry weight basis; N=4 owls x 5 days = 20 owl days
ai daily food intake on a turkey poult diet, dry weight basis; N=26 owl days
aj weight consumed per day on an all chick diet; N=4 owls; Chicks contain an average of 5.54 (0.035 SD) kcal/g (gross energy).

ak	weight consumed per day on an all hamster diet; N=4 owls; Hamsters contain an average of 5.98 (0.007 SD) kcal/g (gross energy).
al	average daily consumption on an all mouse diet; N=1 owl; all seasons; collected in Larimer County, CO; Ingestion rate was equivalent to 4.7% of the owl's body weight. This rate is for a "sedentary" individual.
am	averages of food amounts eaten per day; N=2 birds; Condition=captive; spring
an	typical maximum distance between two roosting sites; N=11 home ranges; winter; Superior and Ann Arbor townships
ao	growth constant based on logistic growth equation; N=1 owl; Delaware County; See table in citation for body weights from 1-31 days of age.
ap	figures showing weight increase and feather growth for 0-73 days of age; N=five owls; collected in California
aq	percent of nests with at least one young surviving to banding age (of all pairs observed); N=1777 territories; near Cincinnati
ar	average number of young hatched; N=12 nests; Hanford Site, Benton and Franklin Counties
as	percent of eggs hatched in nests that produced young; N=11 nests; south-central Montana
at	percent of eggs that failed to hatch; N=4 nests; spring; Jackson Hole
au	mean home range size of nonterritorial individuals in 1990 and 1991; N=6 (1990), 8 (1991); Kluane Lake (60 deg57'N, 138deg12'W), Yukon
av	home range size (minimum convex polygon model) as determined by radiotelemetry; N=22 owls; Tox Study Dur=2 yr
aw	mean resting respiratory rate; N=4; Condition=crippled, non-releasable; corresponding mean body weight was 1682 +/- 127 g
ax	age at time of death; N=1 bird; Jan; Asiniboine Park Zoo, Winnipeg; Owl was probably killed by a car.
ay	known age at time of death; N=1 bird; s. of Aberdeen, Saskatchewan; Owl was killed by a truck.
az	mean standard metabolic rate; N=2 birds; Condition=fasted
ba	mean standard metabolic rate; N=4 birds; Condition=fasted
bb	average basal metabolic rate; N=3 birds; Condition=postabsorptive; May-June; Thermoneutral zone measured at 20.3-32.2 degrees celcius.
bc	range of numbers of nesting pairs counted annually on a 1476 sq km study site; N=4 years; Hanford Site, Benton and Franklin Counties
bd	range of numbers of individual owls counted annually on a 1476 sq km study site; N=4 years; Hanford Site, Benton and Franklin Counties
be	density of nesting pairs; N=4 nests; spring; Jackson Hole
bf	N=12-22 pairs (3 study years); southern Green County
bg	estimated population density based on call counts; N=7 counts; winter, spring, fall; San Joaquin Experimental Range
bh	density based on call counts; N=7 counts; Oct, Nov, Jan, Feb, Apr (over 5 sampling yrs); San Joaquin Experimental Range
bi	N=11 owls; winter; Superior township
bj	mean annual mortality after the first year of banding based on band return data, 1951-1962; N=97 birds; Birds banded as nestlings or juveniles.
bk	mean percent mortality within the first year of banding based on band return data, 1951-1962; N=97 birds; Birds banded as nestlings or juveniles.
bl	mean territory size of territorial pairs; N=16 territories; Kluane Lake (60 deg57'N, 138deg12'W), Yukon
bm	observed range of movement during nesting, based on observations of individual or pair movements; N=4 birds; spring; Jackson Hole
bn	earliest hatching date; N=4 nests; spring; Jackson Hole
bo	egg laying dates; N=16 nests; Condition=breeding; Pima and Pinal Counties
bp	peak period of egg laying; N=11-17 nests (3 study years); southern Green County
bq	period from first territory selection to last brood fledged; N=15 nests; south-central Montana
br	period from earliest egg laying date to date of latest brood departure; N=4 nests; spring; Jackson Hole

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